CLAIMS

What is claimed is:

1. A media manipulation apparatus, comprising:

a media type detector including,

a light source to illuminate a media;

a specular light sensor, and

a first light sensor, wherein the first light sensor has a higher light flux capability compared to the specular light sensor; and

a determination unit to determine a media type of the media based on a signal ratio of a detected specular light sensor intensity and a detected first light sensor intensity.

2. The media manipulation apparatus of claim 1, further comprising:

a light strength control unit to control a light strength signal provided to the light source to control the strength of the light source, wherein the light strength signal is increased from DO to D1 such that a first light sensor signal, detected after said detected first light sensor intensity, falls within a linear region of a sensor characteristic curve of the first light sensor; and

wherein, if a signal of said detected first light sensor intensity falls within the non-linear region of the sensor characteristic curve of the first light sensor, the determination unit bases the media type determination on the detected specular light sensor intensity, the first light sensor signal detected after said detected first light sensor intensity, and a ratio of DO and D1.

3. The media manipulation apparatus of claim 2, wherein the light strength signal is a PWM signal.

4. The media manipulation apparatus of claim 2, wherein the media type determination based on the detected specular light sensor intensity, the first light sensor signal detected after said detected first light sensor intensity, and the ratio of DO and D1, is set forth by the equation $R=[i(S)/i^*(D)] \times [D1/DO]$ where R equals a measure of glossiness of the media, $i(S)$ equals a signal representative of the detected specular light sensor intensity, and $i^*(D)$ equals the first light sensor signal detected after said detected first light sensor intensity.

5. The media manipulation apparatus of claim 1, wherein the signal ratio is a measure of glossiness of the media.

6. A media sensing apparatus, comprising:

a media type detector including,

a light source to illuminate a media;

a specular light sensor, and

a first light sensor, wherein the first light sensor has a higher light flux capability compared to the specular light sensor; and

a determination unit to determine a media type of the media based on a signal ratio of a detected specular light sensor intensity and a detected first light sensor intensity.

7. The media sensing apparatus of claim 6, further comprising:

a light strength control unit to control a light strength signal provided to the light source to control the strength of the light source, wherein the light strength signal is increased from DO to D1 such that a first light sensor signal, detected after said detected first light sensor intensity, falls within a linear region of a sensor characteristic curve of the first light sensor; and

wherein, if a signal of said detected first light sensor intensity falls within the non-linear region of the sensor characteristic curve of the first light sensor, the determination unit bases the media type determination on the detected specular light sensor intensity, the first light sensor signal detected after said detected first light sensor intensity, and a ratio of DO and D1.

8. The media sensing apparatus of claim 7, wherein the light strength signal is a PWM signal.

9. The media sensing apparatus of claim 7, wherein the media type determination based on the detected specular light sensor intensity, the first light sensor signal detected after said detected first light sensor intensity, and the ratio of DO and D1, is set forth by the equation $R=[i(S)/i^*(D)] \times [D1/DO]$ where R equals a measure of glossiness of the media, $i(S)$ equals a signal representative of the detected specular light sensor intensity, and $i^*(D)$ equals the first light sensor signal detected after said detected first light sensor intensity.

10. The media sensing apparatus of claim 6, wherein the ratio is a glossiness ratio of the media.

11. A media type detector, comprising:

a specular light sensor; and

a first light sensor, wherein the first light sensor has a higher light flux capability compared to the specular light sensor, such that, upon an illumination of a media, a

signal ratio of a detected specular light sensor intensity and a detected first light sensor intensity is determinative of a media type of the media.

12. The media type detector of claim 11, wherein the higher light flux capability of the first light sensor is accomplished by an aperture of the first light sensor being larger than an aperture of the specular light sensor.

13. The media type detector of claim 11, wherein the specular light sensor, the first light sensor, and a light source are arranged in the media type detector at equal radii from an illumination point of the media.

14. The media type detector of claim 13, further comprising a semi-circle shaped interior cavity between the media illumination point and the specular light sensor, the first light sensor, and the light source.

15. A media type detector, comprising:

a specular light sensor; and

a first light sensor, wherein the first light sensor has a higher light flux capability compared to the specular light sensor, such that, upon an illumination of a media, when a signal of a detected first light sensor intensity falls within a linear characteristic range of the first light sensor, a signal ratio of a detected specular light sensor intensity and the detected first light sensor signal is determinative of a media type of the media.

16. The media type detector of claim 15, further comprising a determining unit, if the detected first light sensor signal does not fall within the linear characteristic range of the first light sensor, to control an increasing of a strength of a light source performing the illumination of the media until a signal of the first light sensor detected, after said detection of the first light sensor intensity, either falls within the linear characteristic range of the first light sensor or the strength of the light source reaches a maximum.

17. The media type detector of claim 15, wherein the higher light flux capability of the first light sensor is accomplished by an aperture of the first light sensor being larger than an aperture of the specular light sensor.

18. A media type detection method, comprising:

measuring a plurality of light intensities radiating off of a media, including a specular light sensor intensity by a specular light sensor, where the specular light sensor has a smaller light flux capability than a first light sensor measuring one of the plurality of light intensities other than the specular light sensor intensity; and

determining a media type of the media based on a signal ratio of the specular light sensor intensity and at least the first light sensor intensity.

19. The media type detection method of claim 18, wherein the smaller light flux capability of the specular light sensor compared to the first light sensor is accomplished by the specular light sensor having a smaller diameter aperture than an aperture of the first light sensor.

20. The media type detection method of claim 18, wherein the measuring of the plurality of light intensities radiating off of the media is performed prior to a picking of the media by a media manipulation device.

21. The media type detection method of claim 18, wherein the determining of the media type further comprises basing the determination of the media type on an extrapolation of the first light sensor intensity by projecting a signal representative of the first light sensor intensity onto a linear region of a characteristic curve of the first light sensor and by determining a signal ratio of the specular light sensor intensity and the projected first light sensor signal, if it is determined that the first light sensor signal falls within a non-linear region of the first light sensor characteristic curve.

22. A media type detection method, comprising:

measuring at least a first and second light intensities radiating off of a media;

determining if one of the first and second light intensities does not fall within a linear region of a characteristic curve of a light sensor; and

determining a media type of the media based on a signal ratio of at least the first and second light intensities if it is determined that at least both of the first and second light intensities falls within the linear region of the characteristic curve of a light sensor, otherwise determining a media type of the media by extrapolating one of the first or second light intensities, which does not fall within the linear region of the characteristic curve of a light sensor, by projecting the one of the first or second light intensities onto a linear curve and then determining the media type based on a signal ratio of the one of the first or second light intensities that was not projected and the projected one of the first or second light intensities.

23. The media type detection method of claim 22, wherein the projection of the one of the first or second light intensities includes increasing a duty cycle of a PWM signal controlling an intensity of a light source from DO to an amount D1 where a detected

increased light intensity corresponding to the one of the first or second light intensities falls within the linear region of the characteristic curve, and multiplying the increased one of the first or second light intensities by a ratio of DO and D1.

24. The media type detection method of claim 22, wherein the projection of the one of the first or second light intensities includes increasing an intensity of a light source from DO to an amount D1 where the increased one of the first or second light intensities falls within the linear region of the characteristic curve of a light sensor, and multiplying the increased one of the first or second light intensities by a ratio of DO and D1.

25. The media type detection method of claim 22, wherein the measuring of the at least first and second light intensities radiating off of a media is performed prior to a picking of the media by a media manipulation device.